University of California
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SEASONAL LABOR NEEDS FOR CALIFORNIA CROPS

MERCED COUNTY

Progress Report No. 24

by

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Preliminary -- Subject to Correction

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(Farm Labor Survey -- July-December, 1936)

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Seasonal Labor Needs for California Crops
Merced County

Scope of Presentation.-- The following considerations govern the presentation of this progress report:

1. The data are confined to the area indicated above.

2. The data are confined solely to crops, livestock needs being ignored.

3. The findings apply only to occasional or seasonal labor requirements as distinguished from labor contributed by farm operators and by workers employed on a year-round or regular basis of employment.

4. Attention is concentrated upon workers required for hand tasks -- planting, thinning, weeding, hoeing, and harvesting -- without including teamsters, tractor drivers, irrigators, and shed packers of vegetables or fruits.

5. The presentation includes the so-called migratory, transient, or roving workers which comprise an important source of help needed in connection with certain tasks and at "peak" times which seasonally arise in connection with many field, truck, and fruit crops commercially produced in California.

6. This report is confined to California's need for seasonal agricultural workers because of the more pressing problems liable to arise in connection therewith. A later study is planned which will deal with other kinds of labor involved in the production of California's many crops.

Crops, Acreages, and Production.-- The basis used in calculating occasional or seasonal need for labor, in addition to that furnished by farm operators and regularly employed workers, appears as table 1. Due to lack of assembled data, this table has been compiled from various sources, and is considered the best available information upon which to base estimates of labor needs.

TABLE 1

Basis for Calculating Seasonal Labor Requirements
Merced County

Crops	Acreage	Production
Field crops:*		
Alfalfa	57,614	202,598 tons
Beans	7,401	95,191 bushels
Cotton	10,300†	8,618 bales†
Garlic†	60§	
Grain -- barley	71,127	1,219,764 bushels
oats	3,928	82,987 bushels
rye	1,534	7,881 bushels
wheat	22,636	374,514 bushels
Hay, other than alfalfa -- 80 per cent grain hay	24,644	35,635 tons
Onions -- intermediate crop	280§	Average 125 cwt. per acre

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Crops	Acreage	Production
Rice	3,095	197,000 bushels
Sorghums for grain -- "gyp" corn and milo, etc.	3,109	92,585 bushels
Sweet potatoes	4,361	349,499 bushels
Vegetables: ♂		
Beans -- fall ‡	50	
Cantaloupes	700	Average 150 crates per acre
Carrots -- spring	300)	
fall and winter	100)	Average 350 crates per acre
Lettuce -- fall‡	100	
Peas -- spring‡	50	
fall	1,200	Average 75 hampers per acre
Peppers ‡	50	
Tomatoes -- canning	860	Average 9 tons per acre
summer, 600 acres)		
fall, 300 acres)	900	Average 15 tons per acre
Watermelons	1,500	Average 10 tons per acre
Fruit and nut crops: ¶		
Almonds	2,841	800 tons
Apples ‡	19	
Apricots	960	2,000 tons (fresh weight) of which 1,900 tons were dried
Cherries ‡	14	
Figs -- Calimyrna - 3,491 acres)		3,375 tons Kadota (fresh weight)
Adriatic - 2,000 acres)		675 tons Kadota (dry weight) dried ‖
Kadota - 2,250 acres)	9,341	7,000 tons dry weight dried, other
Mission - 1,600 acres)		varieties
Grapes -- raisin	9,420	12,000 tons shipped
table	3,596	40,000 tons raisins (dry weight) ‖
wine	3,880	40,000 tons to wineries, etc.
Nectarines ‡	80	
Olives	85	68 tons for canning) 18 tons not for canning) 86 tons**
Peaches -- clingstone	3,015	13,150 tons canned; 110 tons shipped; 3,800 tons (fresh weight) dried
freestone	2,585	3,400 tons canned; 3,725 tons shipped; 7,200 tons (fresh weight) dried
Pears ‡	16	
Plums	118	200 tons
Prunes ‡	144	200 tons (all dried)
Walnuts	1,110	830,000 pounds ††

* Data from U. S. Census, 1935, for crop year 1934, except where noted.

† Data from California Cooperative Crop Reporting Service. Final California Cotton Report for the 1935 Crop. Sacramento, May 26, 1936. 1p.

‡ Need for seasonal labor on these crops inconsequential, and hence ignored.

♂ Acreage of vegetable crops is from Federal-State Crop Reporting Service. California -- acreage of specified vegetable crops by counties. 1936, p.7.

¶ Data on fruit and nut crop acreage are from C. H. Kinsley, Agricultural

Table continued on next page.

Table 1 continued.

Crops	Average	Production
Rice	5,095	197,000 bushels
Sorghum for grain -- "crop" corn and milo, etc.	5,109	92,886 bushels
Sweet potatoes	4,361	749,490 bushels
Vegetables ¶		
Beans -- fall †	80	
Cucumbers	700	Average 180 crates per acre
Carrots -- spring	500)	
fall and winter	100)	Average 380 crates per acre
Lettuce -- fall †	100	
Peas -- spring ‡	80	
fall	1,200	Average 75 hampers per acre
Peppers †	80	
Tomatoes -- canning	880	Average 9 tons per acre
summer, 800 acres)		
fall, 300 acres)	900	Average 15 tons per acre
Watermelons	1,880	Average 10 tons per acre
Fruit and nut crops: ¶		
Almonds	2,891	800 tons
Apples ‡	18	
Apricots	860	2,000 tons (fresh weight) of which 1,800 tons were dried
Cherries †	14	
Figs -- California - 8,491 acres		(3,276 tons Kadota (fresh weight)
Adriatic - 2,000 acres		678 tons Kadota (dry weight) dried
Kadota - 2,500 acres	9,391	7,000 tons dry weight dried, other varieties
Mission - 1,800 acres		
Grapes -- raisin	9,400	18,800 tons shipped
table	25,000	60,000 tons raisins (dry weight)
wine	3,000	40,000 tons to wineries, etc.
Nectarines ‡	88	
olives	85	58 tons for canning
Peaches -- clingstone	5,975	18 tons not for canning) 88 tons** 13,180 tons canned; 110 tons shipped; 3,800 tons (fresh weight) dried
freestone	2,886	2,400 tons canned; 3,788 tons shipped; 7,200 tons (fresh weight) dried
Pears ‡	96	
Plums	118	200 tons
Prunes ‡	144	200 tons (all dried)
Walnuts	1,110	830,000 pounds † †

* Data from U. S. Census, 1959, for crop year 1958, except where noted.

† Data from California Cooperative Crop Reporting Service. Final California Cotton Report for the 1955 crop. Sacramento, May 26, 1956. 1p.

‡ Used for seasonal labor on these crops inconsequential, and hence ignored.

¶ Average of vegetable crops is from Federal-State Crop Reporting Service. California -- acreage of specified vegetable crops by counties. 1958, p.7

¶ Data on fruit and nut crop averages are from G. R. Kinsey, Agricultural

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Commissioner, unless noted, and represents bearing acreage only.

|| Drying ratio: Kadota figs - 3 to 1
raisins - 4 to 1
peaches - 6 to 1

** Estimate by California Olive Association - 1935 crop.

†† Walnut Control Board estimate is 689,200 pounds merchantable. Culls are estimated to be 17 per cent of total crop - 1935.

Operations Requiring Seasonal Labor and Times of Need.-- Farm operations requiring the use of seasonal labor for the various crops raised in Merced County are indicated in table 2. This tabulation does not include the employing of shed workers needed to wash, pack, and prepare various commodities for shipping and marketing.

TABLE 2

Operations Requiring Use of Seasonal Labor and Times of Needs by Crops
Merced County

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Field crops:				
Alfalfa -- 5 cuttings -- average three-fourths ton each	Mowing	May 1-31 -- all of acreage		8 acres
	Raking	June 1-30 -- all of acreage		16 acres
	Shocking by hand	July 1-31 -- all of acreage		$6\frac{1}{2}$ acres
		August 1-31 -- all of acreage		
		September 1-30 -- two-thirds of acreage		
		October 1-15 -- one-third of acreage		
	Stacking in field or barn, with wagons and slings -- 80 per cent of crop	May 1-31 -- 20 per cent of job		3 tons
		June 1-30 -- 20 per cent of job	66	
		July 1-31 -- 20 per cent of job		
		August 1-31 -- 20 per cent of job		
		September 1-30 -- 12 per cent of job		
		October 1-15 -- 8 per cent of job		
	Baling -- 20 per cent of crop	May 15-31 -- 10 per cent of job		
		June 1-30 -- 20 per cent of job		
		July 1-31 -- 20 per cent of job	100	6 tons
		August 1-31 -- 20 per cent of job		
		September 1-30 -- 20 per cent of job		

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Table 1 continued.

Commissioner, unless noted, and represents bearing acreage only.

|/ Drying ratios: Dadoto figs - 3 to 1
raisins - 4 to 1
peaches - 6 to 1

** Estimate by California Olive Association - 1955 crop.

*/ Yields Control Board estimate is 659,290 pounds marketable. Culls are estimated to be 17 per cent of total crop - 1955.

Operations Requiring Seasonal Labor and Times of Need.-- Farm operations requiring the use of seasonal labor for the various crops raised in Merced County are indicated in table 2. This tabulation does not include the employing of shed workers needed to wash, pack, and prepare various commodities for shipping and marketing.

TABLE 2

Operations Requiring Use of Seasonal Labor and Times of Needs by Crops
Merced County

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Field crops:				
Alfalfa -- 5 cuttings -- average three tons each	Mowing	May 1-31 -- all of acreage		6 acres
	Raking	June 1-30 -- all of acreage		16 acres
	Shocking by hand	July 1-31 -- all of acreage		6½ acres
		August 1-31 -- all of acreage		
		September 1-30 -- two-thirds of acreage		
		October 1-15 -- one-third of acreage		
	Stacking in field or barn, with wagons and altos -- 80 per cent of crop	May 1-31 -- 20 per cent of job	85	3 tons
		June 1-30 -- 20 per cent of job		
		July 1-31 -- 20 per cent of job		
		August 1-31 -- 20 per cent of job		
		September 1-30 -- 12 per cent of job		
		October 1-15 -- 8 per cent of job		
	Baling -- 20 per cent of crop	May 15-31 -- 10 per cent of job		
		June 1-30 -- 20 per cent of job		
		July 1-31 -- 20 per cent of job	100	5 tons
		August 1-31 -- 20 per cent of job		
		September 1-30 -- 20 per cent of job		

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Alfalfa (cont.)		October 1-31 -- 10 per cent of job		
Beans -- black-eye	Shocking by hand	September 15-30 -- 25 per cent of acreage October 1-31 -- 50 per cent of acreage November 1-15 -- 25 per cent of acreage	20	2 acres
	Threshing by portable machines	September 15-30 -- 25 per cent of acreage October 1-31 -- 50 per cent of acreage November 1-15 -- 25 per cent of acreage	80	3 acres (in 8 hours)
other varieties (approximately 1,000 acres, mostly on west side)	Hoeing -- twice	July -- 50 per cent of job August -- 50 per cent of job	100	Total of 3.5 hours per acre
	Irrigating -- average 4 times	April -- all of acreage once June 15-30 -- 75 per cent of acreage July 1-31 -- all of acreage once, half of acreage twice August 1-10 -- 75 per cent of of acreage	80	4 acres (in 12 hours)
	Harvesting with pickup combine	September 15-30 -- 30 per cent of acreage October 1-31 -- 60 per cent of acreage November 1-15 -- 10 per cent of acreage	50	6 acres
Cotton	Chopping	April 25-30 -- 10 per cent of acreage May 1-31 -- 45 per cent of acreage June 1-30 -- 45 per cent of acreage	100	2.5 acres
	Picking	October 1-31 -- 30 per cent of crop November 1-30 -- 30 per cent of crop December 1-31 -- 12 per cent of crop	100	300 pounds seed cotton
		January 1-31 -- 11 per cent of crop February 1-28 -- 10 per cent of crop March 1-15 -- 7 per cent of crop	100	200 pounds seed cotton
Grain -- barley, oats, rye, and wheat	Threshing with combine	June 20-30 -- 15 per cent of crop July 1-31 -- 50 per cent of crop August 1-31 -- 35 per cent of crop	80	8 acres

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Alfalfa (cont.)		October 1-31 -- 10 per cent of job		
Beans -- black-eye	Shocking by hand	September 16-30 -- 25 per cent of acreage October 1-31 -- 50 per cent of acreage November 1-15 -- 25 per cent of acreage	20	2 acres
	Threshing by portable machine	September 16-30 -- 25 per cent of acreage October 1-31 -- 50 per cent of acreage November 1-15 -- 25 per cent of acreage	80	4 acres (in 8 hours)
Other vegetables (approximately 1,000 acres, mostly on truck farms)	Hoeing -- twice	July -- 50 per cent of job August -- 50 per cent of job	100	Total of 5.5 hours per acre
	Irrigating -- average 4 times	April -- all of acreage once June 15-30 -- 75 per cent of acreage July 1-31 -- all of acreage once, half of acreage twice August 1-10 -- 75 per cent of acreage	50	4 acres (in 12 hours)
	Harvesting with pickup machine	September 16-30 -- 50 per cent of acreage October 1-31 -- 50 per cent of acreage November 1-15 -- 10 per cent of acreage	50	6 acres
Cotton	Chopping	April 25-30 -- 10 per cent of acreage May 1-31 -- 45 per cent of acreage June 1-30 -- 45 per cent of acreage	100	2.5 acres
	Picking	October 1-31 -- 50 per cent of crop November 1-30 -- 30 per cent of crop December 1-31 -- 12 per cent of crop	100	200 pounds seed cotton
		January 1-31 -- 11 per cent of crop February 1-28 -- 10 per cent of crop March 1-15 -- 7 per cent of crop	100	200 pounds seed cotton
Grain -- barley, oats, rye, and wheat	Threshing with combine	June 20-30 -- 15 per cent of crop July 1-31 -- 50 per cent of crop August 1-31 -- 35 per cent of crop	80	2 acres

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Onions	Weeding	February 15-28 -- 20 per cent of job March 1-31 -- 40 per cent of job April 1-30 -- 40 per cent of job	100	Total of 86 hours per acre (9-hour days)
	Harvesting -- pulling, cutting tops and roots, and sacking	June 1-30 -- 90 per cent of job July 1-31 -- 10 per cent of job	100	35 cwt.
Rice	Swathing with push header	October 1-31 -- 60 per cent of acreage November 1-20 -- 40 per cent of acreage	50	15 acres
	Threshing with pickup combine	October 1-31 -- 50 per cent of acreage November 1-30 -- 50 per cent of acreage	40	4 acres
Milo and grain sorghums	Cutting by hand -- 50 per cent of acreage	September 15-30 -- 20 per cent of job October 1-31 -- 75 per cent of job November 1-15 -- 5 per cent of job	66	0.75 acre
	Threshing with stationary thresher -- 50 per cent of crop	October 1-31 -- 60 per cent of job November 1-30 -- 40 per cent of job	25	50 sacks
	Threshing with combine -- 50 per cent of acreage	October 1-31 -- 75 per cent of job November 1-15 -- 25 per cent of job	50	5 acres
Sweet potatoes	Planting	April 24-30 -- 5 per cent of acreage May 1-31 -- 90 per cent of acreage June 1-10 -- 5 per cent of acreage	33	0.6 acre
	Harvesting -- picking up and piling	October 1-31 -- 50 per cent of crop November 1-30 -- 50 per cent of crop	50	0.15 acre
Vegetable and truck crops:				
Cantaloupes	Hoeing and thinning -- 2 or 3 times	April 15-30 -- one-third of job May 1-31 -- two-thirds of job	50	Total of 1 man-day per acre

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Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Canta-loupes (cont.)	Picking canta-loupes -- 60 per cent of cantaloupe and honeydew crop	July 10-31 -- 40 per cent of crop August 1-31 -- 60 per cent of crop	100	25 crates (of 68 pounds)
	Packing canta-loupes -- 75 per cent on farms	July 10-31 -- 40 per cent of crop August 1-31 -- 60 per cent of crop	100	150 crates
	Picking honey-dews -- 40 per cent of total cantaloupe and honeydew crop	August 1-31 -- 85 per cent of crop September 1-15 -- 15 per cent of crop	100	$3\frac{1}{2}$ tons
Carrots	Weeding -- twice	February 1-28 -- one-third of spring job March 1-31 -- one-third of spring job April 1-30 -- one-third of spring job	100	Total of 60 hours per acre
		August 20-31 -- 20 per cent of fall job September 1-30 -- 60 per cent of fall job October 1-10 -- 20 per cent of fall job	100	Total of 45 hours per acre
	Bunching	October 15-31 -- 5 per cent of job November 1-30 -- 10 per cent of job December 1-31 -- 10 per cent of job	100	12 packed crates
		April 20-30 -- 15 per cent of job May 1-31 -- 20 per cent of job June 1-25 -- 40 per cent of job	100	15 packed crates
Peas -- fall	Picking (in years of mild weather)	November 1-30 -- 63 per cent of crop December 1-31 -- 22 per cent of crop January 1-10 -- 15 per cent of crop	100	9 hampers
Tomatoes -- can-ning	Transplanting to beds -- 1,200 plants per acre plus 20 per cent for re-plants	March 1-31 -- all of job	80	4,000 plants
	Planting in field	March 15-31 -- 50 per cent of job April 1-15 -- 50 per cent of job	100	0.75 acre

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Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Tomatoes (cont.)	Hoeing	April 1-30 -- 40 per cent of job May 1-31 -- 60 per cent of job	100	3 acres
	Picking	July 15-31 -- 10 per cent of job August 1-31 -- 30 per cent of job September 1-30 -- 35 per cent of job October 1-31 -- 25 per cent of job	100	1,500 pounds
shipping or market -- 75 per cent on stakes	All operations until picking	March 1-31 April 1-30 May 1-31 June 1-15	10	1 man to each $1\frac{1}{2}$ acres continuously
	Picking for shipping	June 15-30 -- 12 per cent of job July 1-31 -- 76 per cent of job August 1-31 -- 12 per cent of job	95	50 lugs of 25 pounds (1,250 pounds)
Watermelons	Hoeing and thinning	April 20-30 -- 50 per cent of job May 1-10 -- 50 per cent of job	90	1 acre
	Picking	July 10-31 -- 40 per cent of crop August 1-31 -- 60 per cent of crop	95	10 tons (in 5 or 6 hours)
Fruit and nut crops: Almonds	Spraying	November 15-30 -- 25 per cent of acreage December 1-15 -- 25 per cent of acreage February 1-28 -- 50 per cent of acreage	66	1 acre
	Knocking	August 15-31 -- 25 per cent of crop September 1-30 -- 70 per cent of crop October 1-7 -- 5 per cent of crop	75	300 pounds
	Hulling	August 15-31 -- 25 per cent of crop September 1-30 -- 70 per cent of crop October 1-7 -- 5 per cent of crop	75	400 pounds

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Apricots	Pruning -- 50 per cent of acreage	October 1-31 -- one-third of job November 1-30 -- one-third of job December 1-31 -- one-third of job	66	0.25 acre
	Thinning -- 25 per cent of acreage*	April 15-30 -- 50 per cent of job May 1-15 -- 50 per cent of job	100	0.2 acre
	Picking	June 15-30 -- 50 per cent of crop July 1-15 -- 50 per cent of crop	100	1,200 pounds
	Cutting for drying	June 15-30 -- 50 per cent of crop July 1-15 -- 50 per cent of crop	100	750 pounds
	Other dry-yard work	June 15-30 -- 40 per cent of job July 1-21 -- 60 per cent of job	90	11 man-hours per fresh ton†
Figs	Pruning -- Kadota variety	December 1-31 -- 25 per cent of acreage January 1-31 -- 25 per cent of acreage February 1-28 -- 25 per cent of acreage March 1-31 -- 25 per cent of acreage	50	0.3 acre (=27 trees)
	Caprifying -- Calimyrna variety only	June 1-30 -- all of job	100	1 man-day per acre
	Picking Kadotas† -- fresh for canning	August 10-31 -- 15 per cent of crop September 1-30 -- 50 per cent of crop October 1-31 -- 30 per cent of crop November 1-8 -- 5 per cent of crop	100	400 pounds
	Picking up -- Calimyrna, Mission, and Adriatic	August 15-31 -- 25 per cent of crop September 1-30 -- 50 per cent of crop October 1-15 -- 25 per cent of crop	100	900 pounds
	Drying, sorting, fumigating, etc.	August 15-31 -- 10 per cent of job September 1-30 -- 40 per cent of job October 1-31 -- 40 per cent of job November 1-15 -- 10 per cent of job	95	9

Table continued on next page.

Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Grapes	Pruning -- Thompson variety, comprises practically all raisin grapes	December 1-31 -- 10 per cent of acreage January 1-31 -- 30 per cent of acreage February 1-28 -- 40 per cent of acreage March 1-31 -- 20 per cent of acreage	75	0.3 acre
	Pruning other varieties	December 1-31 -- 10 per cent of acreage January 1-31 -- 30 per cent of acreage February 1-28 -- 40 per cent of acreage March 1-31 -- 20 per cent of acreage	75	1 acre
	Wrapping and tying -- Thompsons only	December 15-31 -- 5 per cent of acreage January 1-31 -- 30 per cent of acreage February 1-28 -- 40 per cent of acreage March 1-31 -- 25 per cent of acreage	75	3 acres
	Picking for drying -- natural raisins -- 10 per cent of Thompson crop	September 1-15 -- all of job	100	250 trays (of 22 pounds each) fresh weight
	Turning trays	September 10-30 -- all of job	90	1,500 trays of about $5\frac{1}{2}$ pounds raisins
	Rolling trays	September 20-30 -- 50 per cent of job October 1-10 -- 50 per cent of job	80	1,500 trays
	Boxing and hauling in raisins	October 1-31 -- all of job	75	5,000 pounds dry weight
	Picking for wineries -- including Thompsons for dehydrators	September 15-30 -- one-third of job October 1-31 -- two-thirds of job	100	1.5 tons

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Grapes (cont.)	Picking for shipping -- all varieties ¶	August 10-31 -- 10 per cent of job September 1-30 -- 33 per cent of job October 1-31 -- 54 per cent of job November 1-20 -- 3 per cent of job	100	1,500 pounds
Peaches	Pruning free-stones	December 1-31 -- 50 per cent of acreage January 1-31 -- 50 per cent of acreage	66	0.25 acre
	Pruning cling-stones	December 1-31 -- 50 per cent of acreage January 1-31 -- 50 per cent of acreage	100	0.25 acre
	Spraying	November 15-30 -- 25 per cent of acreage December 1-15 -- 25 per cent of acreage February 1-28 -- 50 per cent of acreage	66	1 acre
	Thinning*	May 15-31 -- 50 per cent of acreage June 1-15 -- 50 per cent of acreage	100	0.33 acre
	Picking for canning -- including sorting	August 15-31 -- 80 per cent of job September 1-15 -- 20 per cent of job	100	3,000 pounds
	Picking for shipping	July 1-31 -- 38 per cent of job August 1-31 -- 62 per cent of job	100	1,500 pounds
	Picking for drying	August 1-31 -- 90 per cent of job September 1-15 -- 10 per cent of job	100	2,000 pounds
	Cutting for drying	August 1-31 -- 90 per cent of job September 1-15 -- 10 per cent of job	90	1,500 pounds
	Other dry-yard work	August 1-31 -- 75 per cent of job September 1-30 -- 25 per cent of job	90	$11\frac{1}{2}$ man-hours per fresh ton †
Plums	Picking	June 1-30 -- 25 per cent of crop July 1-31 -- 33 per cent of crop August 1-31 -- 42 per cent of crop	100	750 pounds (25 crates)

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Walnuts	Shaking off, picking up, and hulling ‖	September 1-30 -- 40 per cent of crop October 1-31 -- 60 per cent of crop	100	225 pounds

* Thinning varies greatly in amount, and is not always done. Probably is necessary about four years out of five on peaches, and two years out of five on apricots.

† From Christie, A. W. and L. C. Barnard. The principles and practice of sun-drying fruit. California Agr. Exp. Sta. Bul. 388:40-60. 1925.

‡ Kadota figs are picked fresh for canning, the off grades being sorted out and used for drying. Orchards are picked over once each week or 10 days during the season, and about 3 men per acre are required at the peak of harvest.

§ Drying, sorting, fumigating, etc. of figs are estimated as follows:

23 man-hours per dry ton on Adriatic and Mission variety
27 man-hours per dry ton on Kadota variety
50 man-hours per dry ton on Calimyrna variety
(10 hour days)

¶ Table varieties are mostly packed in sheds in this county, and field labor in picking them is about the same as for wine varieties.

‖ Probably over 50 per cent of walnut crop is hulled by machines.

Findings of Seasonal Labor Needs.-- Details and summaries of seasonal labor requirements of Merced County agriculture are presented as table 3. The "size of task" are figures drawn from table 1, in terms of either acreage or output in tons, crates, boxes, or whatever unit is commonly used. The "output per man-day" is an average figure for the entire acreage or output figured in crates, hampers, boxes, or other units as indicated in the table. If the work is of a nature that requires a crew, different members of which perform different tasks, then the average shown is per man based on the entire crew. Length of day is 9 hours, November to February; 10 hours, March to October, unless otherwise stated. Wide variations in output occur between farm and farm, field and field, and season and season, because of differences in soil types, climatic conditions, weeds, yields, and other factors influencing the amount of work that a laborer can perform in a given day. Moreover, the basis of output is a mature, experienced male worker without reference to use of women, children, and more or less inexperienced help that is sometimes used in connection with certain of the tasks requiring use of seasonal workers. The column headed "available days" reflects (a) limitations set from the period within which the work must be performed because of the nature of the task, such as transplanting, thinning, weeding, and cutting, and (b) available days as determined by weather conditions, inclement weather reducing the number of days when a required task can be performed. The "required number of individuals" is given in terms of workers as noted above in connection with "output per man-day."

It is probable that the estimated number of workers required, as recorded in table 3, will often be too low, for the reason that "peaks" frequently occur, during which an unusually large proportion of the job is done in a very short period. This

would naturally require a much greater number of workers than when the work is spread over a longer period, even though the total amount of labor (in man-days) remains the same.

TABLE 3

Seasonal Labor Needs -- Merced County -- by Months and Tasks

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
January	Cotton: Picking	1,422,000 pounds †	200 pounds	7,110	20	356
	Peas: Picking	13,500 hampers	9 hampers	1,500	7	215 (from 1-10)
	Figs -- Kadota: Pruning	281 acres ‡	0.3 acre	937	20	47
	Grapes: Pruning Thompsons	2,120 acres ‡	0.3 acre	7,067	20	354
	Pruning other varieties	1,680 acres ‡	1.0 acre	1,680	20	84
	Wrapping and tying Thompsons	2,120 acres ‡	3.0 acre	707	20	36
	Peaches: Pruning freestones	853 acres ‡	0.25 acre	3,412	20	171
	Pruning clingstones	1,507 acres	0.25 acre	6,028	20	302
				28,441	20	1,423 man-months ¶
February	Cotton: Picking	1,293,000 pounds †	200 pounds	6,465	24	270
	Onions: Weeding	280 acres	¶	535	12	45 (from 15-28)
	Carrots: Weeding	300 acres	‖	600	24	25
	Almonds: Spraying	937 acres ‡	1.0 acre	937	24	40
	Figs -- Kadota: Pruning	281 acres ‡	0.3 acre	937	24	40
	Grapes: Pruning Thompsons	2,826 acres ‡	0.3 acre	9,420	24	393
	Pruning other varieties	2,240 acres ‡	1.0 acre	2,240	24	94
	Wrapping and tying Thompsons	2,826 acres ‡	3.0 acres	942	24	40
	Peaches: Spraying	1,848 acres ‡	1.0 acre	1,848	24	77
				23,924	24	997 man-months ¶
March	Cotton: Picking	904,500 pounds †	200 pounds	4,523	11	412 (from 1-15)
	Onions: Weeding	280 acres	¶	964	23	42
	Carrots: Weeding	300 acres	‖	600	23	27
	Tomatoes -- canning: Transplanting to beds	990,720 plants ‡	4,000 plants	248	23	11
	Planting in field	430 acres	0.75 acre	574	12	48 (from 15-31)
	shipping or market: All operations until picking	90 acres ‡	**	1,380	23	60
	Figs -- Kadota: Pruning	282 acres ‡	0.3 acre	940	23	41
	Calimyrna: Caprifying	3,491 acres ‡	††	3,491	23	152
	Grapes: Pruning Thompsons	1,413 acres ‡	0.3 acre	4,710	23	205
	Pruning other varieties	1,120 acres ‡	1.0 acre	1,120	23	49

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
March (cont.)	Grapes (cont.)					
	Wrapping and tying Thompsons	1,766 acres ‡	3.0 acres	589	23	26
				19,139	23	833 man-months ¶
April	Beans -- other than black-eye:					
	Irrigating	800 acres ‡	4 acres ‡‡	200	24	9
	Cotton: Chopping	1,030 acres	2.5 acres	412	4	103 (from 25-30)
	Onions: Weeding	280 acres	¶	964	24	41
	Sweet potatoes: Planting	72 acres ‡	0.6 acre	120	5	24 (from 24-30)
	Cantaloupes: Hoeing and thinning	350 acres ‡	¶¶	117	12	10 (from 15-30)
	Carrots: Weeding	300 acres	//	600	24	25
	Bunching	21,000 crates	15 crates	1,400	8	175 (from 20-30)
	Tomatoes -- canning: Planting in field	430 acres	0.75 acre	574	12	48 (from 1-15)
	Hoeing	344 acres	3.0 acres	115	24	5
	shipping or market: All operations until picking	90 acres ‡	**	1,440	24	60
	Watermelons: Hoeing and thinning	675 acres ‡	1.0 acre	675	8	85 (from 20-30)
	Apricots: Thinning	120 acres	0.2 acre	600	12	50 (from 15-30)
				7,217	24	301 man-months ¶
May	Alfalfa: Mowing	38,025 acres ‡	8.0 acres	4,754	26	183
	Raking	38,025 acres ‡	16.0 acres	2,377	26	92
	Shocking	38,025 acres ‡	6.5 acres	5,850	26	225
	Stacking	21,394 tons ‡	3.0 tons	7,132	26	275
	Baling	4,052 tons	6.0 tons	676	13	52 (from 15-31)
	Cotton: Chopping	4,635 acres	2.5 acres	1,854	26	72
	Sweet potatoes: Planting	1,296 acres ‡	0.6 acre	2,160	26	84
	Cantaloupes: Hoeing and thinning	350 acres ‡	¶¶	233	26	9
	Carrots: Bunching	28,000 crates	15 crates	1,867	26	72
	Tomatoes -- canning: Hoeing	516 acres	3.0 acres	172	26	7
	shipping or market: All operations until picking	90 acres ‡	**	1,560	26	60
	Watermelons: Hoeing and thinning	675 acres ‡	1.0 acre	675	8	85 (from 1-10)
	Apricots: Thinning	120 acres	0.2 acre	600	13	47 (from 1-15)
	Peaches: Thinning	2,800 acres	0.33 acre	8,485	13	653 (from 15-31)
				38,395	26	1,477 man-months ¶

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
June	Alfalfa: Mowing	38,025 acres ‡	8.0 acres	4,754	26	183
	Raking	38,025 acres ‡	16.0 acres	2,377	26	92
	Shocking	38,025 acres ‡	6.5 acres	5,850	26	225
	Stacking	21,394 tons ‡	3.0 tons	7,132	26	275
	Baling	8,104 tons	6.0 tons	1,351	26	52
	Beans -- other than black-eye: Irrigating	600 acres ‡	4.0 acres ‡‡	150	13	12 (from 15-30)
	Cotton: Chopping	4,635 acres	2.5 acres	1,854	26	72
	Grain: Threshing with combine	11,907 acres ‡	8.0 acres	1,489	9	166 (from 20-30)
	Onions: Harvesting	31,500 cwt.	35 cwt.	900	26	35
	Sweet potatoes: Planting	72 acres ‡	0.6 acre	120	8	15 (from 1-10)
	Carrots: Bunching	56,000 crates	15 crates	3,734	21	178 (from 1-25)
	Tomatoes -- shipping or market: All operations until picking	90 acres ‡	**	780	13	60 (from 1-15)
	Picking	1,539 tons ‡	1,250 pounds	2,463	13	190 (from 15-30)
	Apricots: Picking	1,000 tons	1,200 pounds	1,667	13	129 (from 15-30)
	Cutting for drying	950 tons	750 pounds	2,534	13	195 (from 15-30)
	Other dry-yard labor	684 tons ‡	¶¶	753	13	58 (from 15-30)
	Peaches: Thinning	2,800 acres	0.33 acre	8,485	13	653 (from 1-15)
	Plums: Picking	50 tons	750 pounds	134	26	6
				46,527	26	1,790 man-months ¢
July	Alfalfa: Mowing	38,025 acres ‡	8.0 acres	4,754	26	183
	Raking	38,025 acres ‡	16.0 acres	2,377	26	92
	Shocking	38,025 acres ‡	6.5 acres	5,850	26	225
	Stacking	21,394 tons ‡	3.0 tons	7,132	26	275
	Baling	8,104 tons	6.0 tons	1,351	26	52
	Beans -- other than black-eye: Hoeing	1,000 acres	‖‖	175	26	7
	Irrigating	1,600 acres ‡	4.0 acres ‡‡	400	26	16
	Grain: Threshing with combine	39,690 acres ‡	8.0 acres	4,962	26	191
	Onions: Harvesting	3,500 cwt.	35 cwt.	100	26	4
	Cantaloupes: Picking	25,200 crates	25 crates	1,008	17	60 (from 10-31)
	Packing	18,900 crates	150 crates	126	17	8 (from 10-31)
	Tomatoes -- canning: Picking	774 tons	1,500 pounds	1,032	13	80 (from 15-31)
	shipping or market: Picking	9,747 tons ‡	1,250 pounds	15,596	26	600

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
July (cont.)	Watermelons: Picking	5,700 tons ‡	10 tons [a]	570	17	34 (from 10-31)
	Apricots: Picking	1,000 tons	1,200 pounds	1,667	13	129 (from 1-15)
	Cutting for drying	950 tons	750 pounds	2,534	13	195 (from 1-15)
	Other dry-yard labor	1,026 tons ‡	¶¶	1,129	17	67 (from 1-21)
	Peaches: Picking for shipping	1,457 tons	1,500 pounds	1,943	26	75
	Plums: Picking	66 tons	750 pounds	176	26	7
				52,882	26	2,034 man-months ϕ
August	Alfalfa: Mowing	38,025 acres ‡	8.0 acres	4,754	26	183
	Raking	38,025 acres ‡	16.0 acres	2,377	26	92
	Shocking	38,025 acres ‡	6.5 acres	5,850	26	225
	Stacking	21,394 tons ‡	3.0 tons	7,132	26	275
	Baling	8,104 tons	6.0 tons	1,351	26	52
	Beans -- other than black-eye: Hoeing	1,000 acres	‖‖	175	26	7
	Irrigating	600 acres ‡	4.0 acres ‡‡	150	8	19 (from 1-10)
	Grain: Threshing with combine	27,783 acres ‡	8.0 acres	3,473	26	134
	Cantaloupes: Picking	37,800 crates	25 crates	1,512	26	59
	Packing	28,350 crates	150 crates	189	26	8
	Melons: Picking honeydews	35,700 crates [b]	3.5 tons	10,200	26	393
	Carrots: Weeding	100 acres	[c]	90	9	10 (from 20-31)
	Tomatoes -- canning: Picking	2,322 tons	1,500 pounds	3,096	26	120
	shipping or canning: Picking	1,539 tons ‡	1,250 pounds	2,463	26	95
	Watermelons: Picking	8,550 tons ‡	10 tons [a]	855	26	33
	Almonds: Knocking	150 tons ‡	300 pounds	1,000	13	77 (from 15-31)
	Hulling	150 tons ‡	400 pounds	750	13	58 (from 15-31)
	Figs: Picking Kadotas	810 tons	400 pounds	4,050	17	239 (from 10-31)
	Picking up Calimyrnas, Missions, and Adriatics	1,750 tons	900 pounds	3,889	13	300 (from 15-31)
	Drying, sorting, fumigating, etc.	729 tons ‡	[d]	2,552	13	197 (from 15-31)
	Grapes: Picking for shipping	1,200 tons	1,500 pounds	1,600	17	95 (from 10-31)
	Peaches: Picking for canning	13,240 tons	3,000 pounds	8,827	13	679 (from 15-31)
	Picking for shipping	2,378 tons	1,500 pounds	3,171	26	122
	Picking for drying	9,900 tons	2,000 pounds	9,900	26	381
	Cutting for drying	8,910 tons ‡	1,500 pounds	11,880	26	457
	Other dry-yard labor	7,425 tons ‡	¶¶	8,539	26	329

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
August (cont.)	Plums: Picking	84 tons	750 pounds	224	26	9
				100,049	26	3,849 man-months ϕ
September	Alfalfa: Mowing	25,325 acres ‡	8.0 acres	3,166	26	122
	Raking	25,325 acres ‡	16.0 acres	1,583	26	61
	Shocking	25,325 acres ‡	6.5 acres	3,897	26	150
	Stacking	12,836 tons ‡	3.0 tons	4,279	26	165
	Baling	8,104 tons	6.0 tons	1,351	26	52
	Beans -- black-eye: Shocking	320 acres ‡	2.0 acres	160	13	13 (from 15-30)
	Threshing	1,280 acres ‡	3.0 acres	427	13	33 (from 15-30)
	other than black-eye: Harvesting with combine	150 acres ‡	6.0 acres	25	13	2 (from 15-30)
	Sorghums for grain: Cutting by hand	205 acres ‡	0.75 acre	274	13	22 (from 15-30)
	Melons: Picking honeydews	6,300 crates b	3.5 tons	35	13	3 (from 1-15)
	Carrots: Weeding	100 acres	c	270	26	11
	Tomatoes -- canning: Picking	2,709 tons	1,500 pounds	3,612	26	139
	Almonds: Knocking	420 tons ‡	300 pounds	2,800	26	108
	Hulling	420 tons ‡	400 pounds	2,100	26	81
	Figs: Picking Kadotas	2,700 tons	400 pounds	13,500	26	520
	Picking up Calimyrnas, Missions, and Adriatics	3,500 tons	900 pounds	7,778	26	300
	Drying, sorting, fumigating, etc.	2,916 tons ‡	d	10,206	26	393
	Grapes: Picking for raisins	160,000 tons	5,500 pounds	58,182	13	4,476 (from 1-15)
	Turning trays	36,000 tons ‡	1,500 trays e	8,728	17	514 (from 10-30)
	Rolling trays	16,000 tons ‡	1,500 trays e	3,879	8	485 (from 20-30)
	Picking for wineries	13,333 tons	1.5 tons	8,889	13	684 (from 15-30)
	Picking for shipping	3,960 tons	1,500 pounds	5,280	26	204
	Peaches: Picking for canning	3,310 tons	3,000 pounds	2,207	13	170 (from 1-15)
	Picking for drying	1,100 tons	2,000 pounds	1,100	13	85 (from 1-15)
	Cutting for drying	990 tons ‡	1,500 pounds	1,320	13	102 (from 1-15)
	Other dry-yard labor	2,475 tons ‡	¶ ¶	2,847	26	110
	Walnuts: Shaking off, picking up, and hulling	332,000 pounds	225 pounds	1,476	26	57
				149,371	26	5,746 man-months ϕ

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
October	Alfalfa: Mowing	12,700 acres†	8.0 acres	1,588	13	123 (from 1-15)
	Raking	12,700 acres†	16.0 acres	794	13	62 (from 1-15)
	Shocking	12,700 acres†	6.5 acres	1,954	13	151 (from 1-15)
	Stacking	8,558 tons†	3.0 tons	2,853	13	220 (from 1-15)
	Baling	4,052 tons	6.0 tons	676	13	52 (from 1-15)
	Beans -- black-eye: Shocking	640 acres†	2.0 acres	320	26	13
	Threshing	2,560 acres†	3.0 acres	854	26	33
	other than black-eye: Harvesting with combine	300 acres†	6.0 acres	50	26	2
	Cotton: Picking	3,489,750 pounds†	300 pounds	11,633	26	448
	Rice: Swathing with push header	930 acres†	15.0 acres	62	26	3
	Threshing with pickup combine	620 acres†	4.0 acres	155	26	6
	Sorghums for grain: Cutting by hand	770 acres†	0.75 acre	1,027	26	40
	Threshing	6,945 bushels†	100 bushels	70	26	3
	Threshing with combine	584 acres†	5.0 acres	117	26	5
	Sweet potatoes: Harvesting	1,090 acres†	0.15 acre	7,267	26	280
	Carrots: Weeding	100 acres	c	90	8	12 (from 1-10)
	Bunching	7,000 crates	12 crates	584	13	45 (from 15-31)
	Tomatoes -- canning: Picking	1,935 tons	1,500 pounds	2,580	26	100
	Almonds: Knocking	30 tons†	300 pounds	200	6	34 (from 1-7)
	Hulling	30 tons†	400 pounds	150	6	25 (from 1-7)
	Apricots: Pruning	106 acres†	0.25 acre	424	26	17
	Figs: Picking Kadotas	1,620 tons	400 pounds	8,100	26	312
	Picking up Calimyrnas, Missions, and Adriatics	1,750 tons	900 pounds	3,889	13	300 (from 1-15)
	Drying, sorting, fumigating, etc.	2,916 tons†	d	10,206	26	393
	Grapes: Rolling trays	16,000 tons†	1,500 trays e	3,879	8	485 (from 1-10)
	Boxing and hauling in	30,000 tons†	5,000 pounds	12,000	26	462
	Picking for wineries	26,667 tons	1.5 tons	17,778	26	684
	Picking for shipping	6,480 tons	1,500 tons	8,640	26	333
	Walnuts: Shaking off, picking up, and hulling	498,000 pounds	225 pounds	2,214	26	86
				100,154	26	3,853 man-months f
November	Beans -- black-eye: Shocking	320 acres†	2.0 acres	160	12	14 (from 1-15)
	Threshing	1,280 acres†	3.0 acres	427	12	36 (from 1-15)

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
November (cont.)	Beans (cont.)					
	other than black-eye: Harvesting with combine	50 acres ‡	6.0 acres	9	12	1 (from 1-15)
	Cotton: Picking	3,489,750 pounds †	300 pounds	11,633	24	485
	Rice: Swathing with push header	620 acres ‡	15.0 acres	42	16	3 (from 1-20)
	Threshing with pickup combine	600 acres ‡	4.0 acres	155	24	7
	Sorghums for grain: Cutting by hand	51 acres ‡	0.75 acre	68	12	6 (from 1-15)
	Threshing	4,630 bushels ‡	100 bushels	47	24	2
	Threshing with combine	194 acres ‡	5.0 acres	39	12	4 (from 1-15)
	Sweet potatoes: Harvesting	1,090 acres ‡	0.15 acre	7,267	24	303
	Carrots: Bunching	14,000 crates	12 crates	1,167	24	49
	Peas: Picking	56,700 hampers	9 hampers	6,300	24	263
	Almonds: Spraying	469 acres ‡	1.0 acre	469	12	40 (from 15-30)
	Apricots: Pruning	106 acres ‡	0.25 acre	424	24	18
	Figs: Picking Kadotas	270 tons	400 pounds	1,350	6	225 (from 1-8)
	Drying, sorting, fumigating, etc.	729 tons ‡	d	2,552	12	213 (from 1-15)
	Grapes: Picking for shipping	360 tons	1,500 pounds	480	16	30 (from 1-20)
	Peaches: Spraying	924 acres ‡	1.0 acre	924	12	77 (from 15-30)
				33,513	24	1,397 man-months ¢
December	Cotton: Picking	1,552,000 pounds †	300 pounds	5,174	22	236
	Carrots: Bunching	14,000 crates	12 crates	1,167	22	54
	Peas: Picking	19,800 hampers	9 hampers	2,200	22	100
	Almonds: Spraying	469 acres ‡	1.0 acre	469	11	43 (from 1-15)
	Apricots: Pruning	105 acres ‡	0.25 acre	420	22	20
	Figs -- Kadota: Pruning	281 acres ‡	0.3 acre	937	22	43
	Grapes: Pruning Thompsons	706 acres ‡	0.3 acre	2,354	22	107
	Pruning other varieties	560 acres ‡	1.0 acre	560	22	26
	Wrapping and tying Thompsons	353 acres ‡	3.0 acres	118	11	11 (from 15-31)
	Peaches: Pruning freestones	853 acres ‡	0.25 acre	3,412	22	156
	Pruning clingstones	1,508 acres	0.25 acre	6,032	22	275
	Spraying	924 acres ‡	1.0 acre	924	11	84 (from 1-15)
				23,767	22	1,081 man-months ¢

* On a monthly basis unless otherwise noted.

† Seed cotton -- For September, October, and November, it is estimated that it takes 1,350 pounds of seed cotton to

Table continued on next page.

Table 3 continued.

make a bale. After the frost -- that is, during December, January, February, and March -- this figure is estimated to be 1,500 pounds.

‡ Portion of job done by seasonal workers.

§ It should be noted that this figure, rather than representing the required number of workers, represents the required man-months of seasonal labor, and is derived by dividing the total number of man-days by the total number of days available for work during the month.

¶ Onion weeding is estimated to require a total of 86 man-hours per acre -- 20 per cent in February, and 40 per cent in each of March and April.

‖ Weeding the spring crop of carrots requires a total of approximately 60 man-hours per acre -- one-third in each of the months, February, March, and April.

** Estimated to require one man continuously for each 1½ acres.

†† Caprifying requires one man-day per acre.

‡‡ Rate of work for 12-hour day.

§§ Hoeing and thinning cantaloupes require a total of one man-day per acre -- one-third in April, and two-thirds in May.

¶¶ Dry-yard labor, other than cutting, estimated to be as follows:

Apricots - 11 man-hours per fresh ton
Peaches - 11.5 man-hours per fresh ton

‖‖ Bean hoeing is estimated to require 3.5 man-hours per acre -- 50 per cent in July, and 50 per cent in August.

a/ Rate of work for a 5 to 6-hour day.

b/ Crates of 38 pounds net weight.

c/ Weeding fall and winter carrots is estimated to require 45 man-hours per acre -- 20 per cent in August, 60 per cent in September, and 20 per cent in October.

Table continued on next page.

Table 3 continued.

d/ It is estimated that it requires an average of 35 man-hours per dry ton to handle these figs, allowance being made for the variation in amounts of labor required for different varieties.

e/ Trays of about 5½ pounds raisins, net weight.

TABLE 4

Summary of Seasonal Labor Needs by Months
Merced County
1935

Month	Required man-days of seasonal labor	Available days	Required man-months of seasonal labor
January	28,441	20	1,423
February	23,924	24	997
March	19,139	23	833
April	7,217	24	301
May	38,395	26	1,477
June	46,527	26	1,790
July	52,882	26	2,034
August	100,049	26	3,849
September	149,371	26	5,746
October	100,154	26	3,853
November	33,513	24	1,397
December	23,767	22	1,081
Total	623,379	--	24,781

Notes

Notes on Table 2.-- Data concerning "time of need" as shown in this table break down required seasonal labor into the period in which the work is performed in order to permit a subsequent determination of labor needs by months (table 3). Some operations are performed only to a limited extent with seasonal labor. For instance, only about 80 per cent of the labor in harvesting grain is done by seasonal workers. When a job extends over several different months, the proportionate amount for each month is shown.

The amount of work done each month is based on the cropping system followed during 1935. The allotting of amounts of work is based on findings concerning local farm practices, and required time to "make" a crop resulting from inquiry of producers, and records of carlot shipments, the latter proving helpful in fixing dates of planting and of subsequent tasks involved in producing certain crops. Proportionate amounts of output harvested each month were determined from data of local practices with respect to harvesting, and from carlot shipments of perishable products. Records of truck shipments were also used when available.

Notes on Table 3.-- Table 3 is the condensed summary of labor needs as worked out for Merced County as a result of findings pertinent to 1935. The data are presented by months with the tasks which were performed in each month indicated by both crop and task. The size of the job was calculated from the data appearing in table 1 (acreage and production) and table 2 (task, time of performance, and percentage of work pertinent to a given month). The output per man-day was calculated as indicated in the foreword presenting table 3. The number of required man-days is a result of dividing the size of task by output per man-day. The available days for the different tasks involve two variables. The first is the number of days when field work is possible because of favorable weather conditions. The basis for this column was determined from a study of the monthly weather charts of the United States Weather Bureau for the years 1933, 1934, and 1935. These data indicated available days per month as follows (based on a 26-day working month without allowance for holidays):

Month	Available days	Length of work day	Month	Available days	Length of work day
		hours			hours
January	20	9	July	26	10
February	24	9	August	26	10
March	23	10	September	26	10
April	24	10	October	26	10
May	26	10	November	24	9
June	26	10	December	22	9

Source of data: Based on precipitation records of the Los Banos station of the United States Weather Bureau for the years 1933, 1934, and 1935.

The second factor influencing the number of available days was the size of the job. If the output was only a few cars, then the number of days was limited to the time needed to get out those cars efficiently. If a field operation had to be performed in a period less than the number of available days in the month, then the specific number of days was noted. These restrictions are shown in parentheses. For example, in July, picking of apricots was limited to the first half of the month, picking watermelons to the last twenty days, etc.

The totals of table 3 show the total required man-days of needed seasonal labor, the available days for field work during the month, and the necessary number of men (as defined in the opening paragraph of table 3) required on a monthly basis to care for the tasks ordinarily performed by seasonal workers.

In an area such as Merced County, involving a variety of annual crops, the findings as set forth in this report are bound to fluctuate materially from year to year, because of the market outlook upon what and how much acreage is planted, and when it is planted; because of variable seasonal conditions affecting yields, time of performing operations, and available days; and because of harvesting operations on certain crops being speeded up to supply a good market, or retarded to avoid a poor one, resulting in marked variations in the need for harvest labor.

Month	Available days	Available length of work day (hours)	Month	Available days	Available length of work day (hours)
January	20	9	July	26	10
February	24	9	August	26	10
March	25	10	September	26	10
April	24	10	October	26	10
May	26	10	November	24	9
June	26	10	December	22	9

Source of data: Based on precipitation records of one ten-year station of the United States Weather Bureau for the years 1953, 1954, and 1955.

The second factor influencing the number of available days was the size of the job. If the output was only a few acres, then the number of days was limited to the time needed to get out those acres efficiently. If a field operation had to be performed in a period less than the number of available days in the month, then the available number of days was noted. These restrictions are shown in parentheses. For example, in July, picking of apricots was limited to the first half of the month, picking walnuts to thirteen days, and [illegible] days to [illegible].

The totals of table 3 show the total required man-days of needed seasonal labor, the available days for field work during the month, and the necessary number of men defined in the opening paragraph of table 3, required on a monthly basis to carry for the tasks ordinarily performed by seasonal workers.

In an area such as Merced County, involving a variety of annual crops, the findings as set forth in this report are beyond to fluctuate materially from year to year, because of the market outlook upon which and how much farmers is planted, and when it is planted, because of variable seasonal conditions affecting yields, time of performing operations, and available days, and because of harvesting operations on certain crops being speeded up to supply a good market, or retarded to avoid a poor one, resulting in marked variations in the need for harvest labor.